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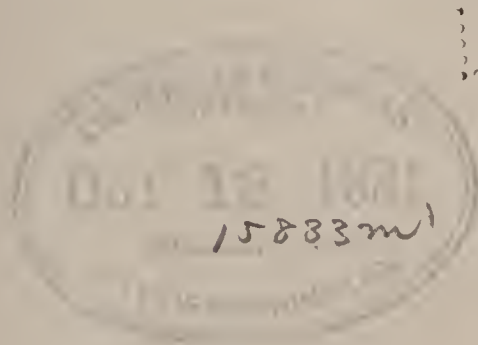
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# YELLOW BIRDS.

BY  
ERNEST INGERSOLL.

And other stories.

FULLY ILLUSTRATED.



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## YELLOW-BIRDS.

WE have commonly in our gardens, almost everywhere in the United States, two “yellow-birds” which are very unlike each other. I propose to tell you something about each of them, so that you may be able to tell them apart and study them to better advantage. The first of which I shall speak is the goldfinch, or “thistle yellow-bird,” a member of the great cone-billed family of finches and sparrows, the *Fringillidæ*, whose systematic name is *Chrysomitris tristis*. The canary-bird is a cousin of his, and very much like him.

The goldfinches are not migratory, except at the



extreme north, but in winter go away to the pastures and frozen swamps where there are plenty of seeds of the wild weeds waiting to be gathered, and so they seem to leave us with the rest of the runaway birds in the fall. Besides this, their plumage at that time is very dull colored, and thus one would not easily recognize them as the same birds which gladdened us all summer. But as May melts into June, the sun touching the dull gray feathers of the silent bird, changes them to a pure, shining yellow, just as in the old Roman story everything which that marvelous man Midas, looked upon, was turned to gold. Then, too, the opening blossoms of the apple and cherry trees attract the goldfinches back to the garden, and they so enjoy dodging about the young and fragrant flowers that their long silence ~~is~~ broken and you hear their cheery voices from morning till night. "The winter of their discontent" is over, and they are no longer *triste*. Each male is arrayed in a brilliant suit of canary-yellow, with jet black cap, wings and tail, the wings barred with white ; and the females only differ from their lords in wearing a dull greenish color in place of the golden yellow. Their bills are yellow and transparent at the edges.

Do not seek them now in the woods and distant fields. They are wandering about the orchards and

gardens and road-sides in flocks of ten, twenty, or a hundred, flying in a series of long undulations, and settling with a circular sweep, or swarming quickly to some other bush in response to a whistled invitation from some gay companion.

Their food varies with the season. When the red maples are in blossom in earliest spring, the goldfinches pick the tender stamens and pistils, and snatch up the insects that infest the flowers. Next the apple and cherry blossoms afford a similar repast. When the gardener prepares his rich beds of lettuce, the goldfinch flies down to get the tiny beetles and earth-worms unearthed by his hoe, and spying the freshly-sown salad seeds feasts upon them as long as they last. Should the gardener escape this danger, however, and succeed in bringing his lettuce, onions or mustard to maturity, the goldfinches again assail the ripened heads, and, if allowed, rob them of every one of the seeds upon which he is depending for his succeeding crop. This mischievous trait gives them the name of salad-birds in the neighborhood of Philadelphia. During the summer and autumn they feed on the seeds of all the wild weeds and garden plants, their bright yellow plumage contrasting very beautifully with some of the large and gayly colored flowers—the purple iris, for example,—which they

frequently visit. The seeds of the thistle they are especially fond of, and you may see them any day in September swinging on the springy heads, out of which they eagerly tear the seeds until the silk is flying in gauzy clouds all about them. In eating so many of the seeds of these and other road-side plants they act as a serious check upon the increase of noxious weeds, and thus are of no little assistance to the agriculturist, not to mention the vast quantity of larvæ of small moths, flies, beetles, ants, etc. which they destroy during the summer.

No one of our birds has a sweeter voice than the goldfinch, and its plaintive *che-wé*, *che wéah* as it balances on an aster-head, or rises and falls in its billowy flight, is one of the most delicious of rural sounds. But in spring the male has a love-song excelled by few other birds. It is "sweet, brilliant and pleasing . . . now ringing like the loud voice of the canary, now sinking into a soft warble." Indeed the goldfinch is a near relation of the canary, and attempts to pair them have met with varying success. It lives well in confinement, learning to sing with great compass and beauty. A gentleman near Philadelphia possessed one that he reared from the nest, which was trained to vary and modulate its song in time with the movements of its owner's finger,



increasing and decreasing the volume by the lifting and dropping of the finger, and accelerating and retarding the time by the sidewise movement of the same.

The goldfinch seems to be persistently gregarious, for even in the breeding season several families are usually found in the same neighborhood, and the males often assemble together and pass the time in collecting food, singing in concert, bathing and trimming their feathers. They are veritable dandies, loving to bask in the sun, and waving their bodies about as though trying to show their golden feathers in the best light.

This is almost the last of all our birds to build its nest, rarely beginning about Philadelphia before the first week in June, on Lake Erie not until a fortnight later, and at Boston hardly before the first of July. Yet long before this time mates have been chosen after much energetic courtship and coy flirtation. Their love-making is done in the most charming language, and the honeymoon is of longer duration than in the case of most other birds.

Finally they settle down to work, and build an exquisite villa, placing it in a bush or garden shrub, a maple or an orchard tree, sometimes among the topmost sprays, sometimes on a low level branch with

diverging twigs. The nest is a firm basket, neatly woven and skillfully fastened to the twigs between which it rests. Often it is much higher than broad, although only a small cavity in the top is needed to hold the five or six bluish-white, unspotted eggs. Dr. Brewer has described this delicate structure so completely that I might as well quote him as to seem to do so by making a new picture myself :

“The base of this nest is a commingling of soft vegetable wool, very fine stems [and flowering heads] of dried grasses, and fine strips of bark, all being in very fine shreds. The sides, rim and general exterior of the nest is made up, to a large extent, of fine slender, vegetable fibres, interwrought with white and maroon-colored vegetable wool. These materials are closely and densely felted together. The inner nest is softly and thoroughly lined with a softer felting made of the plumose appendages or pappus of the seeds of composite plants.”

So fond of the thistle is the goldfinch that she adorns the walls of her house with its glistening silk, and makes her luxurious bed of the elastic gossamer that floats through the summer air.

With the coming of the dreary days of November the goldfinches exchange their gay suits for a sober dress of drab, and resort to the fields, roadsides and

country lanes, finding an abundance of food in the dry and rustling weeds and tall grasses, keeping together in busy little companies, and braving the snow with the same happy voices that sang *che-wéah* in June.

Almost the only other bird-home near the house likely to be mistaken for the goldfinch is that of the other "yellow-bird" — the summer warbler. It belongs to the *Dendræcæ* or group of wood-warblers. Instead of the canary-like form of body, cone-shaped beak and short square tail of the goldfinch, it has an attenuated beak, a slender form, elongated tail and long thin legs. It is a warbler and an insect-eater, while the other is a finch and a seed-eater. Both are yellow, but the finch has a black cap, black wings and tail, while the warbler is pure yellow everywhere except that the back is dusky, there is some brown on the edges of the feathers of the tail, and the breast and sides are streaked with brownish-red. Its name in the books is *Dendræca æstiva*.

It is abundant throughout the whole of North America, and its nest is to be found in every garden, during the latter half of May. Usually a hedge or bush is chosen, but sometimes large trees. The maples shading the village streets are favorite resorts, and if you examine a row of these trees when the



leaves have fallen you will be surprised to see how many nests have been built over your head during summer, the dense foliage secreting the little architects from your watchful eyes. The situation is always in an upright fork of twigs to which the nest is bound with great firmness. The frame work is a cup tightly woven of fibres of wild hempen plants, strips of pliant bark—the inner bark of the grape-vine and elm are favorites with all warblers,—and slender stems of tough weeds, lined with fine grasses. But the bird is rarely content with this alone. If cotton is to be found about the yard, it is quickly seized; tufts of wool caught from the sheep by the slivers in the fence or the brambles are borne away by the builder for the adornment of its home, and the whole pasture is searched for the woolly furze from stems of ferns, mullein-stalks, milk-weeds, cat-tail flags and cotton-wood seeds. Such downy substances the mother-bird mats down for a bed inside, patches on without, and folds over the rim, sewing them firmly to the frame-work with horsehairs and strings and hempen threads, until the whole nest is hidden in a fluffy and beautiful fleece, pure white, or orange-yellow, or clouded yellow and maroon. I remember finding a nest in Southern Michigan formed so exclusively of orange-colored vegetable



GOLDFINCHES IN WINTER.





## *Yellow-birds.*

wool that if I had taken it out of the twigs with which it was interlaced the yielding mass would no more have retained its place than a pinch of cotton.

The eggs of the summer warbler are faded light-green, irregularly dotted and blotched with different tints of reddish-brown and lilac. When the young are born, after the mother has brooded eleven days, both parents are devoted to them and anxious as to their safety. They are fed with insects of various kinds.

The song of this pretty warbler is sweet and pleasant, though not loud or prolonged. Mr. Gentry hits it very closely when he describes its language as expressed by the syllables *whit-ti-tee-tee tee-tee*, uttered forcibly and with gradually rising cadence. During an early morning walk through the village in June, one's ear is sure to be greeted with this pretty strain, and you will soon be able to recognize it in the larger concert of birds always to be heard in the orchards and sunny groves.

It said to do well in the cage, and to be susceptible of considerable teaching.



## THE YELLOW-BIRDS' COUSINS.

CANARY birds, the dainty aristocratic cousins of our pretty wild garden warblers, are natives of the Canary Islands, north west of Africa, from which they take their name, and where they are still found.

The wild canaries have a plumage of dusky gray, and build their nests in trees, or high thick shrubs, using roots, feathers, moss and hair for material.

According to an old story, at the beginning of the sixteenth century a ship bound for Leghorn, carrying with other merchandise some of these

birds, was wrecked off the coast of Italy. The little songsters flew to the nearest land, which chanced to be Elba, and so that famous island was the first spot in Europe where they lived and sung; but they were so relentlessly pursued by bird-hunters that now not one of them remains on the island.

Since the date mentioned they have been carried all about the civilized world. Germany has become the special place for raising them and supplying other countries. The Tyrolese are also largely engaged in the same industry.

When these warblers were new to Europeans, they were too expensive to be bought by any but the rich ; and they were called "sugar birds," because of their liking for sugar.

At the picturesque little town of Imst, in Southern Germany, canaries were once bred in great numbers, and men carried them on their backs to England, Russia, all parts of Europe, even to Turkey and Egypt. After six or eight months, these agents would return, bringing large sums of money to their employers. This industry has fallen off ; but, in Germany, the tourist still sees extensive breeding establishments, where the many rooms are arranged like the chambers of a hotel — each one well lighted

and ventilated, its floor covered with sand to the depth of three or four inches, little trees set up, drinking water, bathing water, and feeding-boxes in convenient places, while round the walls are ranged the nests. About twenty male birds, and three times as many females, will be found occupying one of these commodious apartments.

German canaries are still held to be the finest singers ; but this is owing to their training, as they are taken from their nests at an early age and placed where they may hear the singing of larks and nightingales, their power of imitation almost equalling that of parrots. Several have even been taught to talk plainly.

Canary birds often live to be twelve or fifteen years old. Not long since there was a canary bird at the South End of Boston known to be sixteen years old. After singing thirteen years he kept silent two years then began again, and at last account was continuing his melodies like a young bird.

Three years ago one of our newspapers contained the announcement :

*“Died, at his home in Andrews Street, September 1, Quartus, a canary, in the eighteenth year of his age.”*

This Methuselah-bird was remarkable for its song and intelligence ; and its owner prized it so highly



that he wrote an account of its life. In the course of the biography the writer says :

“ He sung magnificently day and night. People passing along the street after the gas was lighted would stop to listen to him ; he was a very nightingale. I was accustomed to hang his cage in the folding doorway between the two parlors. In the back parlor there was a stand of flowers by the windows, and as I opened the cage-door every morning the bird invariably flew out, and alighting among the flowers recreated to his heart's content. I had so trained him that when I thought he had been out long enough I would order him home, and he would return at once to his cage.

“ I remember well one day when a lady friend was calling upon me, the cage door not being shut, Quartus seeing the goodly flowers on my friend's bonnet, winged his way unperceived to her head, and suddenly startled her by that peculiar flutter and whirr that indicates the approach of a bird on the wing. ‘ Oh ! ’ she exclaimed, ‘ what ever *is* that ? ’

“ ‘ It is only Quartus, mistaking your bonnet for a flower-pot, ’ I quietly replied, and thereupon I commanded him back to his cage. He obeyed, and the lady regained her composure. I suppose she thought it a little worse than having ‘ a bee in her bonnet.

I could have hugged Quartus, — the dear, cunning little fellow ! ”

In 1865 the owner of Quartus went to Europe, leaving the bird in the care of a faithful woman, tak-



A "SUGAR BIRD."

ing a few feathers with him as a keepsake. On his return, after seven month's absence, the bird recognized him with joyous excitement. Quartus was

blind the last year of his long life, and died finally of old age.

A remarkable canary bird was in Chicago a few years ago, and perhaps is there still. He was twelve years old, but despite his age a most charming and lively singer. He had been blind two years, but sang not one whit less merrily, and would climb about his cage, putting out his foot to feel his way just as a blind man does his cane. His owner was very proud of him, and every one who saw him marvelled at the blithe-spirited little musician.

There are now about fifty varieties of cage-canaries. Among the most remarkable in form is the "Belgian," with its long slender body and neck, and its high square shoulders. A variety known as the Lancashire has a bunch of crest-feathers hanging down over the eyes. They are of all colors — yellow, green, white, brown, gray, etc. They differ in disposition and intelligence as well as in musical power: some are active; some, selfish; some, affectionate; some, unobservant; some will not sing in solitude, others will not sing in company, and some will not sing because they dislike the paper on the walls of the room where their cage is hung. Some will do their best only in the presence of a rival, and some

will seem ashamed when they hear themselves surpassed.

A foreign gentleman kept a canary eight years in alternate solitude and society. When alone, he was lively, affectionate, contented, and willing that his owner should handle him for any length of time. But in the company of other birds he was frightened out of his wits, and made himself hated by the female birds, while he was bullied by all of his own sex. This same hermit-bird had a son that was of the opposite temperament. He was very fond of bird-kind, full of droll antics, and, when not singing gleefully, would be almost always feeding, or being fed by his neighbors.

Canaries can be taught many little tricks, such as to draw up a bucket containing their seed, to carry a tiny gun, fire it off, fall down and lay as though dead, etc. In some rare cases they learn to articulate words. A friend of my own in California last winter taught a young canary in a very short time to ring a bell when he wanted her ; and if she did not obey the signal he would impatiently pull and shake it. Sometimes he would ring the bell by taking the handle in his bill, and at other times he would lift the tongue and drop it against the side.

In London, bird fanciers do a thriving business by



painting sparrows and selling them for canary birds. Artificial canary birds have been made that could sing an air in two parts. When Patti, the celebrated vocalist, was in Russia a year or two ago, she was presented with a canary bird of life size, made of solid gold, with a pearl bill and diamond eyes.

The Hon. Amelia Murray, whose mother was a Lady-in-waiting upon George the Third's daughters, says, in her Recollections "Once Queen Charlotte came over to Burnham with the eldest Princesses, Augusta and Elizabeth. While she was there, she allowed two little canary birds, pets of mine, to be let out of their cage, and they instantly flew and nestled in her Majesty's lap. The Queen was a little startled; but my mother happily exclaimed, 'What a good augury! The flight of birds is always lucky!'"

In St. James Park, London, there is an avenue where Charles the Second kept his feathered favorites and it is still known as "Bird-Cage Walk."

It was related a few years ago of Cardinal Antonelli, one of the great men of Italy, that he was so fond of canary birds that he had over two hundred of them, and spent hours every day in his aviary.



## THE SWAN.

FROM ancient times the swan has been a favorite bird. It has figured in poetry and song and story, and it was celebrated in the old Greek mythology which contains many allusions to it. Here it was dedicated to Apollo, because, according to Banier, it was supposed to have by instinct a faculty of prediction; but it is possible that the swan was consecrated to the Deity of Music, from its fabled melody at the moment of death.

But we must not suppose that the Singing Swan is the graceful bird which ornaments the waters of our pleasure-grounds. The Singing Swan is a native of the far, far North, where it is called the "Whistling Swan." Its notes are melodious, and as whole flocks

of them sing while in flight, their high, wild, viol-like music is often heard at great distances. It visits England and the Scottish Islands during the cold winter months, where it is shot and marketed as game.

These Song Swans are also called "Hoopers" from the resemblance of their note to the cry of "Hoop! hoop!"

They are also called in the Orkney Isles the "Country-man's Almanac," for their departure is said to presage good weather, and their arrival the reverse; while in far Iceland their return heralds summer.

Whatever association the Icelanders may have combined with the notes of the Hooper, Hearne rejoices not at those of the Trumpeter, so called from its tones resembling those of a trumpet. "I have heard them," says he, "in serene evenings after sunset, make a noise not very unlike that of a French horn, but entirely divested of every note that constitutes melody, and often have been sorry that it did not presage their death."

The swans' down which the Hudson's Bay Company formerly supplied in such quantities was mostly procured from the Trumpeter.

It seems that in ancient times swans were found in nearly all the known world. They were from time to time seen on the waters of Africa; Strabo speaks of

those in Spain ; and Paphos, the favorite isle of Venus, was said to be full of them ; while the ponds and lagoons of Australia still abound with the Black Swan, which is very hardy and which has been successfully naturalized both in England and Germany, and may now be seen on ornamental waters in those countries, though still very rare.

One fine specimen of this species is domesticated on the pond in the Boston Public Gardens, where it is very fond of sailing side by side with the swan-necked barges and picking up the various goodies thrown at it by the boat-loads of merry little passengers.

The Swan is an old and valued inhabitant of England.

In Edward IV.'s time there were many old laws concerning swans, and none were permitted to keep them who did not possess a freehold of at least five marks, yearly value, except the king's son ; and by an act of Henry VII. persons convicted of taking their eggs were liable to a year's imprisonment, and a fine at the will of the sovereign. " More anciently, if a swan was stolen in an open and common river, the same swan, or another, according to old usage, was to be hanged in a house, by the beak, and he who stole it was compelled to give the owner as much corn as







would cover the swan, by pouring and turning the corn upon the head of the swan, until the head of the swan was covered with corn."

It may seem strange that the laws were so stringent in regard to stealing a swan or even an egg, for though, it is a very beautiful bird, and has the old prestige in its favor, yet that would hardly account for its being hedged round with such restrictions.

The fact is that it was not only considered fair to look upon, but good for food, and from an early period has been highly esteemed at feasts.

The following was found among the receipts of the master cooks of Richard II.

"CHANDEON FOR SWANS.

"Take the liver and the offal (that is the giblets of the swans), put it to seethe in good broth. Take it up. Take out the bones and have the flesh small. Make a mixture of crust of bread and of the blood of the swans, sodden. Add thereto powder of cloves and pepper, wine and salt, and seethe it. Cast the flesh thereto 'hewed' and 'mess it forth' with the swans."

The city of Norwich had a preserve for swans, which were only eaten at the municipal feasts or send as presents to distinguished individuals.

At Abbotsbury in Dorsetshire there was also a noble swanery belonging to the Earl of Ilchester, where six or seven hundred of these birds were kept. The swanery was anciently the property of an abbott, and before the monasteries were dissolved there were sometimes double this number.

More recently the Thames was filled with swans. Most of them were owned by Queen Victoria, but a great number belonged to the Vintners and Dyer's Companies of the city of London.

Deputations from these Companies made an annual visit to their preserves, called Swan-hoffing. This term was a corruption of swan-upping, the latter word referring to the act of taking up the swans to mark them. A Frenchman, whose book of Natural History was translated by an American, and published by one of the first houses in this country, speaks of swan-hoffing or capering, evidently giving the word its most literal meaning.

The swans were marked in the presence of the royal swan-herd with the distinguishing mark of the Society to which the parent bird belonged. The swan-mark was cut upon the upper mandible and consisted of certain figures denoting the ownership.

Queen Victoria's mark, and it was that of the three



last kings, was composed of five open rather long ovals, pointed at each extremity. Two of these were placed with the ends in a longitudinal direction on each side of the "berry" and a little below it; the other three crossed the bill transversely a little lower down.

In the olden time, those whose business it was to mark the swans went up the river annually in August in barges gaily decorated.

They used to land at Barn Elms, and partake of a cold collation on the grass, where they danced away many an hour.

This was a gala day, and the ambition of the simple villagers reached its height when they were admitted to the society of the fine folks of London on these festive occasions.

Swans have often been known to attack other animals and even man.

Those in the gardens of the Luxembourg at Paris have taken a dislike to all their keepers, and whenever one approaches they all come out of the water on purpose to attack him.

An old writer tells us that in July, 1731, an odd accident happened in Bushy Park, to one of the keepers in the king's stables. He was riding his majesty's own hunting-horse which was so frightened

by a swan flying at him out of the canal that he ran away and dashed his brains out against the iron gates ; the rider was thrown on the iron spikes, which only entering his clothing did him no hurt. Some time before, the same swan is said to have flown at His Highness the Duke, but caused no disaster.

Within the last year one of the old swans which ornament the waters in one of the Boston cemeteries attacked an aged lady who was passing along the path and flapped her with his wings until she was thrown to the ground, and one of her eyes nearly destroyed.

The strength of the swan is shown in the following anecdote. A female, while in the act of setting, observed a fox swimming towards her from the opposite shore. She instantly darted into the water and, having kept him at bay a considerable time with her wings, at last succeeded in drowning him. She then returned in triumph to her nest among the reeds.

A Mr. Blackwell, who noticed a large number of swans alight on an extensive reservoir, relates the following story to show that this bird has warm feelings and is capable of the strongest attachment. The reservoir belonged to some calico printers near Middleton, and Mr. Blackwell's attention was attracted to the birds by hearing their loud cries.

He perceived that one of their number had been shot at and was so severely wounded in its wing that it was disabled.

This one was left behind by the rest with the exception of a single companion which hovered around for hours, uttering its mournful cry. The workmen, however, continued to make such a disturbance in endeavoring to secure the wounded one that the other finally took its flight and was not seen again for two or three months when it returned to its captive mate. It soon became accustomed to the presence of strangers but did not remain very long on account of some strange dogs which found their way to the reservoir. It never returned ; but about six months after the wounded bird, having recovered, left the scene of its woes, and, as the narrator of the story adds, "doubtless she found her lover in regions where calico printing and strange dogs are unknown."

The power of prediction has been mysteriously accorded to this water-bird ; and swans probably do have an instinct in regard to weather-changes in common with many other birds. This has been noticed by observers of the River Thames swans.

At times the violent rains will cause the river to swell, and the water begins to rise. When this happens at the season for hatching, the birds have been

seen busily employed in raising their nests, in order to save their eggs from being washed away by the flood.

For eighteen years a swan has built her nest by the side of the Thames in the same spot. One spring she was sitting on her eggs as usual, when it was observed that she was getting together a quantity of grass and weeds, and trying to raise her nest.

As soon as this was noticed, a laborer was sent with a load of straw and rubbish and told to throw it down beside her.

The bird seemed to understand what it was for, and with the materials thus provided she began at once to raise her nest some two or three feet higher. There came a heavy fall of rain that very night, which flooded the meadows and did a great deal of damage in the neighborhood of the river ; but the swan and her nest were safe. Instinct had led her to take precautions that man, for want of foresight, had neglected.

Much of his property was destroyed, but the eggs of the swan escaped ; for the prudent mother had raised them just high enough to be above the flood.

The swan has great powers of locomotion. It glides like a vessel under full sail over the water



much faster than a man can walk, and in a brisk gale it sometimes flies at not less than a hundred miles an hour.

“The swan with arched neck proudly rows,  
Between her white wings mantling  
Her state, with oary feet; yet oft she quits  
The dank, and rising on stiff pinions, tours  
The mid-ærial sky.”

Many of these birds are long lived, some even reaching the great age of two hundred years.

The ancients say, according to Buffon, that the swan in dying emits sounds exceedingly beautiful, making a prelude of harmonious notes to its last sigh, its final accents being so sweet and touching that they compared its notes to the plaintive murmur of a low voice chanting its own funeral dirge. But the death-song of the swan is evidently a fiction, though poetry is filled with it, and Shakespeare mentions it in several of his plays.





## THE WASP

### AND THE MULTIPLICATION TABLE.

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POOR little Sally May was in distress.

She had been told by her mother to learn the Eighth Line of the Multiplication Table and she couldn't do it. She was in the library alone, but the birds were singing outside and the bees buzzing, while there she was in that high chair with an old, yellow copy book on her lap covered with ugly black figures.

Life just then was a muddle to Sally. She could grasp the idea of "fixed fate" in the shape of punishment from mamma if she didn't learn her lesson ;

but as to "free will," *that* she knew would take her out of doors, and then what would become of the Eighth Line?

Sally had been told that the Egyptians were the authors of our alphabet (though the Greeks named it), and for a great while Sally hated the Egyptians; but Grimm's stories, which she could now read herself, reconciled her to these ancients. Last evening, her father told her some scholars said that the Phœnicians invented numbers, and now how she did hate the Phœnicians! She had heard that King Hiram was a Phœnician, and she wondered what made Solomon employ such horrid people to help him build the Temple in Jerusalem!

At the back of her brother John's Arithmetic she found that Cain, in addition to his other sins, was accused of getting up weights and measures; and she felt sure that the Phœnicians must have been his descendants. If Abel had only killed Cain! But then Abel wouldn't have been good if he had. All this was even more perplexing than the Multiplication Table. She got off the high seat and placed herself on a cricket, putting the yellow book into papa's big chair; then she rested her little face upon its elbow.

She was going over and over again, "eight times nine are" — when the curls dropped over the eyelids and Sally was fast asleep.

Soon after her mother was startled by a shrill scream, and running in she found Sally half awake and a wasp flying off from her little fat arm.

Nestled in the big chair on Mrs. May's lap, her rosy, tearful face turned away from the ammonia which her mother was putting on the wound, she said she "wanted a story."

"Well, shall it be about the wasps?" her mother asked. "They love their little waspies just as I do my little girl — better than any other insect loves its children."

Sally hesitated. She looked at her arm.

"I don't think wasps can be nice. But if they are, why, of course, I want to know. What do wasps do besides sting?"

"They make paper and they build houses."

"Make paper! How can wasps make paper?"

"My little Sally, if the ancients had watched wasps as closely as Reaumur did for twenty years they would have discovered, as he did, what the wasp comb was made of, and we should have had paper centuries before we did.

"One day a mother-wasp lighted on Reaumur's window-sash and begun boring into it. He saw her get a bundle of the wood-fibres, which she didn't swallow but bruised with her jaws into a sort of lint (wasps have no teeth, but their mouths are armed with



strong muscular jaws called mandibles). Then she rolled this mass into balls with her feet, when she moved to another part of the window-frame carrying with her the bundle to which she continued to add. Reaumur caught her and found that the wooden fibres were as fine as a hair and about the tenth of an inch long; of the same color and texture as the walls of the vespiary, which is the name of a wasp's city."

"And do they make their houses of paper?"

"All the social wasps do. I'm going to tell you first about the kind which live in barracks underground. By and by I'll come to those which make hanging nests on trees, in barns or porticoes, and to the solitary mud wasp.

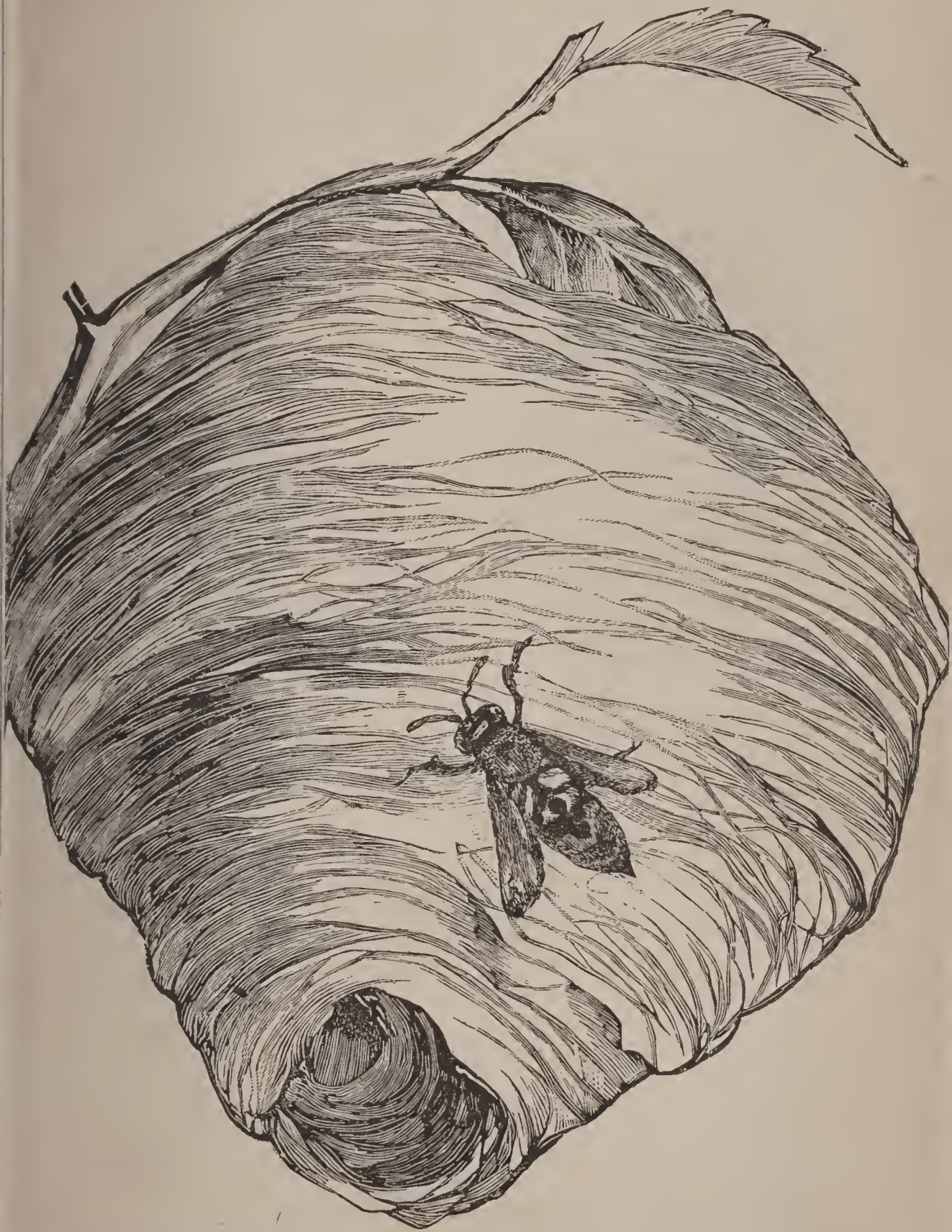
"In the spring the lady-wasp, who has been asleep all winter, wakes up and goes flying about in the most energetic manner, looking for a place to build. Sometimes she finds the hole of a ground-mouse which saves her a great deal of labor, although she has to enlarge it below and contract its entrance above. If she doesn't get a place to suit her, she digs a hole from one to two feet in diameter, carrying away the dirt herself. A mother-wasp merits more praise for industry than the queen bee who never stirs without a big train of subjects, always ready to do her bidding and pay her homage.

“Before a wasp begins to build she ejects from her mouth, upon the wooden particles she has collected, a glutinous liquid which sticks them together, and then she kneads them into a paste, rolling it out with her mandibles, her feet, and her tongue, into a sheet as thin as tissue paper, walking backwards all the time to keep her eye on her work.

“With this sheet she begins her roof, for wasps build downwards. One sheet wouldn’t be strong enough to keep the earth from falling in upon her; so she spreads fifteen or sixteen layers, one above the other, till the roof is nearly two inches thick.

“Then she lays the terrace or floor, which she connects with the roof by twenty or thirty strong paper rods. On this floor she constructs, with the utmost delicacy and accuracy, six sided-cells, and in each she lays an egg.

“The cells open towards the bottom of the nest, ready for the grubs which lie with their heads downwards. As soon as a cell is vacant it is cleaned out ready for another egg. When the foundress thinks that she has made rooms enough she stops building to look up food for the grubs, which will hatch out in eight days. They have no feet and are quite helpless, so she feeds them with choice bits prepared in her own stomach.”



HORNET-WASP BUILDS A ROUND OR PEAR-SHAPED NEST, THE COLOR RESEMBLING FADED LEAVES.







“And don’t the papa-wasp do anything?”

“For some reason they are never builders, soldiers, providers or nurses: but it seems that the wasp-madamames do make scavengers and undertakers of them.

“These nests contain thousands of wasps but they all die when cold weather comes except a few hardy females, who drop their cares and take a long nap until warm weather comes again.”

“But, mamma, how are the little ones fed, ’way down in the ground?”

“O, their mammas steal from us and from the bees (one wasp is a match for three bees) and they carry nearly all their booty to their young, or to the sick at home. Every bit of sugar or fruit juice which they swallow they have a way of getting back again to put into their hungry childrens’ mouths. Every fly also that they catch goes to the nest below.”

“When Bridget says I’m waspish again, I’ll tell her wasps do some good things.”

“Yes, they love their families dearly, and never sting their best friends, as human folks often do; and if their nest is broken up the old wasp will not leave it, but stay by to the last to take care of the little ones. They are good carpenters too, and repair their houses neatly when they are damaged. They carry a double pickaxe, forceps, chisel, knife,

file, scissors, augur, pincers and saw, wherever they go, in their mandibles — a tool-box of their own. Wasps are courageous too, and very persistent.

“ Dr. Darwin says that he once saw a wasp on his gravel walk with a fly nearly as large as itself. He watched closely and saw her cut off the head of her prey and part of its body to lessen its weight and then she started with it ; but the wind blew the wings of the fly around her own, impeding her flight. So she stopped, put the fly down, sawed off first one wing and then the other, and this time she flew away with her prize. Wasps know that fresh meat spoils quickly ; and how do you think they keep it, as they haven't ice-houses ? ”

“ How, mamma ? ”

“ When they catch a caterpillar they dare not take him alive to their babies for fear he might hurt them ; and yet it wouldn't be safe to kill him very long before they need him : so Mrs. Wasp gives him a slight sting which coils him up and he stays thus till he is wanted for dinner.”

“ Mamma,” said Sally, thoughtfully, “ how lonesome the poor lady wasp must be when she wakes up in the spring, in her big house all alone, and all the other wasps dead.”

Mrs. May smiled. “ Perhaps : but as a wasp never uses the same house the second season, and has so

much to do to get ready for her new family, she probably soon forgets all about her old home."

"Tell me about hanging nests, mamma."

"There is a kind of social wasp which constructs very ingenious hanging nests on shrubs. She forms terraces of cells which have no outer walls but are quite exposed to the weather. The cells are not horizontal but nearly vertical so that the rain can run off. The nest is covered with a coat of varnish which the wasp puts on with its tongue to prevent moisture soaking into it.

"Then the well-known hornet-wasp builds a round or pear-shaped nest in the holes of decayed trees, or on the branches and often upon old posts and palings. The workmanship is coarser than that upon underground nests, the color resembling faded leaves. When the grubs are full grown, the hornet lines the cell with silk, covering also its upper opening. The grubs lie three weeks, and then they come out as wasps, ready to help mamma build more cells, for the first brood which all social-wasps hatch out are neuters or workers. Some of these pear-shaped nests are sixteen inches long and in the largest part eight or ten inches in diameter, and when the combs are taken out will make a hat large enough for a big boy's head. A colony of these insects, which are often called white-tailed hornets, will make a good fight

against a whole district school of vicious Yankee boys who delight in throwing stones at them. A hornet will start from its nest as soon as a stone strikes it, single out a particular boy, and go for him with the swiftness of an arrow, pursuing him sometimes eight or ten rods, and when it comes within an inch of his head instantly change ends with itself and sting him. The poison is very quick in its operation and powerful. If three or four hornets sting one boy at the same time, he will have as much as he can do to get home. Men and horses have actually been killed by these insects. Hornets prey on other insects and eat flesh. "Yellow-jackets" are very fierce — often seen on trees infested with plant lice.

"The nests of some South American species are so tight, strong and light, that the natives use them as baskets after the cells are removed.

"The Card-Maker wasps of Guiana hang an elegant funnel-shaped nest on the highest twig of a tree, out of the monkeys' reach, who try to get the honey stored in it. Travellers tell us that the thick paste-board with which this wasp covers her house is so hard and so highly polished raindrops cannot rest on its surface, and the texture is so uniform and white that our most skilful card manufacturer might be proud of the work. The insect enters by a small hole in the bottom of the nest.



“Mud wasps are sand burrowers. They belong to the solitary species and do not live in communities. The females dig out cells in sandy ground, not with their mandibles, as other wasps do, but with their feet. Their legs are furnished with strong brushes which they use to push the earth aside with. Mud wasps are of a dark-blue-purple color. Jaeger says, “When digging its hole it resembles a dog digging after mice, throwing the earth under it towards its hind body with its fore feet. If the pile of sand becomes too high, or troublesome, it places itself upon it, and throws the earth behind it with great force until it is leveled. It is curious to see one of these wasps take hold of a cockroach, seizing it by one of its long antennæ and continually walking backward, compelling the cockroach to follow, notwithstanding its great reluctance and constant opposition, until both have arrived at the hole, when the wasp kills it by a sting in the neck, then tears it into pieces and carries it into her dwelling as food.”

“How funny! I most forgot about the sting, and all about something else too, mamma.”

“What is it, Sally?”

“The Eighth Line.”

“Well, to-morrow we’ll go at it in earnest, and work as hard as the wasps do, and maybe we’ll learn to multiply numbers as fast as they do cells.”

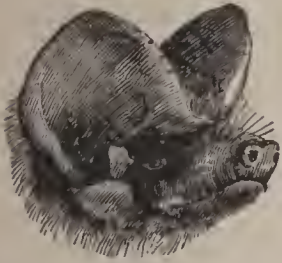


## SOMETHING ABOUT BATS.

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**T**HOSE curious animals, the bats, have been thought of as mysterious, and what the Scotch call “uncanny.” Two or three thousand years ago people began to connect them with unnatural things, and consecrated them to Proserpine, the wife of Pluto, the god of the Lower Regions. The old Israelites placed them among “unclean animals,” and we find their images carved on the tombs of ancient Egypt. Having been given such a bad name they kept it ; and ignorant persons yet do not believe them any better than they should be. The horrible dragon killed by St. George was borne up by bat-wings, and Satan is represented in old pictures as having the same supports

distinguishing his evil disposition and dark home from the light and joy of angels, who are pictured as sweeping through heaven on the white pinions of doves. You remember in that well-known scene in Shakespeare's play of "Macbeth" how the witches, circling round the seething cauldron in which they are preparing their wicked charm, put in



BAT'S HEAD. *Species*  
*Nyctinomus nasutus.*

"Eye of newt, and toe of frog,  
Wool of bat, and tongue of dog,"

with the "fenny snake" and other fearful and strange ingredients.

It is only within a century or two that people began to rid their minds of these foolish fears and superstitions, and to examine whether owls and bats and other mysterious animals were really in league with evil spirits as they had so long been believed to be. Of course it was soon found out that they were not only innocent and harmless, but of great use to man.



THE HOARY BAT. *Species*  
*Lasiurus cinereus.*

At first, bats were considered birds because they could fly; but it was soon found that they were really

four-footed animals. So they were classed with the *Mammalia*, and given a place to themselves under the name of *Cheiroptera* — a word from the Greek, meaning *wir'-handed*. This name expresses the case precisely ; their hands are wings, and they are the only mammals that can truly fly ; for the flying lemures of Africa, the flying opossums of Australia, and the flying squirrels of our own land, can only make long leaps through the air, supported by their “parachute.”

If you take a bat in your hand and examine it, you will see that its body is shaped something like that of a mouse ; and that its fur is very soft and silky ; that it has a small head, sharp, cat-like teeth, large ears with prominent inner lobes ; a pointed nose, perhaps adorned with leaf-like appendages standing upright at the end ; and small, piercing eyes. Its hind legs and short tail are much like those of mice. These features, and the size, vary, of course, with the different species. Some are not as large as canary birds, while others spread their wings five feet ; some have noses so covered with protuberances as to mask the face ; the ears of many are immense, complicated banners, but in many others are small, pointed, and simple. But the main characteristic of all bats, and one in which they are all nearly alike, because in all it serves exactly the same purpose, is the broad membrane



which stretches from their hands to their toes, and thence to the end of the tail. This membrane is like exceedingly thin and soft leather, may be split, and is so transparent that with a microscope you may see the globules of blood rolling along the veins which traverse the membrane to its farthest edge.

How is it extended and folded up so neatly?

If you gently pull out the wing of the bat in your hand you may feel the bones, and you will easily find that the distance from the shoulder to the curious hook half way out upon the front edge of the wing, by which the bat often hangs himself up to a limb, is measured by two bones, joined in the middle. These bones are the *humerus* or arm-bone, and the *ulna*, or forearm, with its little *radius* alongside ; the joint in the middle is the elbow, and the sharp hook, or claw is the thumb-nail. Right at this point are the bones of the wrist, and from it radiate to the outer edge of the membrane one short and three long slender bones, which are the bat's fingers. The little fellow spreads his wing by holding out his arms and stretching apart his fingers ; and folds them up close to his body, where the membrane wrinkles like the cloth of a folded umbrella. Very strong muscles are needed to operate these long and distant fingers, and when you dissect a bat you find that the bones of the chest are

broad and thick, forming a foundation for all the larger muscles, which act as levers to raise and pulldown the wing. This, and all other parts of the bat's body, show how beautifully its structure has been suited to its peculiar habits.

The membrane of the wing is exquisitely sensitive. Nerves run to every part of it, and I do not know where else you would find any capable of receiving such delicate impressions. Bats seem to guide themselves mainly by this fine sense of touch, for their home is in dark places, they roam chiefly at night, and their eyes are small. A naturalist in Europe, about 1793, named Spatlanzani, noticed that bats could fly with great certainty in a perfectly dark room, not striking against the walls, or against strings and branches hung from the ceiling. He covered their eyes with court-plaster, and stopped their ears with cotton, but they did it equally well. Then, to make quite sure, he put out their eyes, yet the poor blind animals flew just as safely as before, skilfully dodging all obstructions. By this and other experiments it was shown that all over the wing was a network of nerves so sensitive that they warned the bat of the nearness of objects by feeling a change in the air.

The great length and size of the wing makes it

awkward for the bat to walk, and on a perfectly smooth hard surface, like the marble top of a table, he finds it almost impossible to make any headway. His plan is to catch his hooked thumb in some projection and drag himself along, then reach ahead, get a new hold, draw his body up to it, and so on. This is hard, slow work, and the little fellow makes a very grotesque appearance. He likes better to be flying, and so he climbs up backwards, "hand over hand," with his hind feet, to some high place in a dead tree, or over an old stone wall, and rests, hanging head downwards, where he can drop into the air and have room to spread his wings at an instant's warning.

As a Primary school-boy would say in beginning his "comp'sish'n" — there are many kinds of bats! They inhabit all parts of the world, and in some countries are exceedingly numerous. They may be separated into two sorts — *insect-eaters* and *fruit-eaters*.

To the first-class — the insect-eater — belong our common little friends whose nightly flitting in summer amuses us so much as we try to follow their ziz-zag course through the shadows. They are hard to tell from swallows sometimes; indeed, they seem to be on very good terms with the chimney-swifts and the nighthawks, dodging about in the same irregular

fashion, and carrying on through the night the war upon the winged pests of the air which the birds leave off at the coming of darkness. Like the swallows, too, the bats enjoy the vicinity of water, skimming close to the glassy surface to snatch up the mosquitoes and gnats which hover over the pond, and occasionally touching the water to drink upon the wing. At such places, on calm summer evenings, the air often seems to swarm with bats, and their fine, piercing cries are showered down into our ears like so many needles. They feed largely on flies, the wings of which are adroitly sheared off before the body is eaten; but the moths which are abroad at twilight and in the night are also tasteful to them. and it is the following of the unsteady, winding flight of these moths which gives the bats their peculiar motion. Bats think themselves in good luck, too, when they meet with one of those dense swarms of minute insects so frequently seen in summer, rising and falling in the level rays of the setting sun, and make quick work of snapping up the airy dancers and dissipating their mazy waltz. Bats fly with astonishing swiftness and for a great length of time; and that they have the strength to travel very long distances is shown by the fact that the Madeiras, the Azores, and other mid-ocean islands have bats of their own, and



that our common little brown bat visits the Bermudas every year, although these islands lie six hundred miles from Carolina, the nearest mainland.

With the return of morning sunshine the bats all disappear in their hiding-places, hanging themselves up in chimneys, old walls, caves, hollow trees, under the eaves of old-fashioned buildings, and in all sorts of dark holes and crannies, sometimes huddling together in great numbers, — as many as ten thousand having been found inhabiting the garret of a single old house in Maryland. Here they remain, asleep, their leathery wings folded about them like cloaks, until the cry of the whip-poor-will the next evening calls them forth to new gambols. As the chill nights of autumn grow colder and colder, and the birds begin to leave us for warmer climates, the bats are no longer seen. They have retired to their holes and gone to sleep for the last time until next spring.

“What! do they sleep straight through the winter?”

Yes; unless they wake up for a day or two in the “January thaw.”

But it is something more than sleep — it is a condition almost of death, called *torpidity*; the bat is said to be *hybernating*. If you took one in your hand at this time he would shrink a little, but would not open

his sleepy eyes, prick up his thin ears, nor try to unfold his tightly wrapped wings. You would feel little warmth in his body, could not detect that his heart beat in the least, or that he breathed. If you did not arouse him by warmth, or a sudden shock, you might put him in a closed jar with pure air, and after an hour find that he had not corrupted the air in the least, as he certainly would have done had he breathed it ; or you might put him in a tight box with deadly gases and they would not affect him.

“ Poor little fellow ! ” you say. “ He is dead ! ”

Not so fast.

Take him again and hold him in your hand until the gentle warmth revives him — too great or sudden warmth might kill him — and, little by little his sluggish blood will begin to circulate, life will come back to him, and soon he will be flying about the room as briskly as ever he did. Sometimes the weather becomes so warm in winter (in the South they hardly need to hybernate at all), that the bats wake up for a day or two, but usually have to go back and take a nap of six weeks or so more before they can come out “ for good and all.” Thus I have sometimes seen them flitting about the wharves in New York city in February. Occasionally bats that have been sleeping in a warm place will arouse themselves and

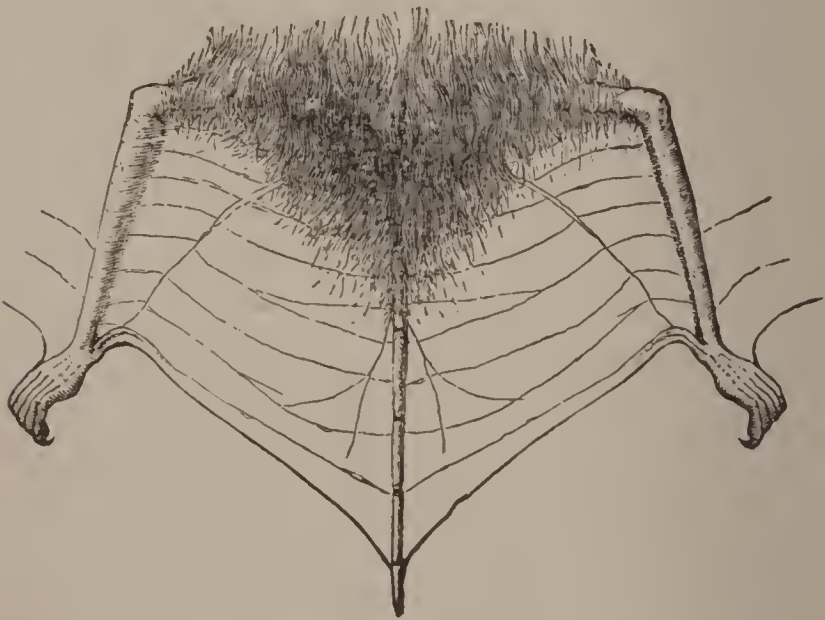
go out of doors on a frosty night, when they are almost sure to perish before they get back to their snug resting-places. They are not remarkable reasoners.

Considering their food and their love of warmth, it is not surprising to find that the tropical regions contain the greatest number of bats, and those of largest size. The monsters of the family are to be found in the dense, vine-laced forests along the Amazon, in the jungles of India, and in the cane-brakes of the East India islands,

“Those matted woods where birds forget to sing,  
But silent bats in drowsy clusters cling.”

Mr. Goldsmith drew a whole picture in that last line of the many different fruit-eating species of the East, and their haunts. They are all of much larger size than the insect-eaters of the temperate zones, and subsisting on the luscious fruits that grow so abundantly in the tropics, cause great havoc among the plantations, robbing the fig-trees as fast as the fruit can ripen, and compelling the owners to protect their orchards by great nets or by a lot of little cages of bamboo splints put about each cluster of fruit. Some of these bats can see as well during the brightness of noon-day as amid the shades of twilight; but during the day the most of them withdraw to cliffs or caverns to sleep, or retire to gloomy forests and hang upon its

trees in great colonies — many hundreds occupying the same tree, to which they regularly resort. Their favorite is the banyan tree — that giant of the woods which sends shoots downward from its branches which take root, until, in course of time, a single tree becomes a considerable grove. To the branching rafters of this



STRUCTURE OF BAT.

great green roof they hang in rows like some curious brown fruit, each mantled in the cloak of his leathery wings, and sound asleep. When returning in the morning from their midnight foraging, a scene of the greatest confusion occurs. Those who get to the tree first resist all the rest, striking at them with the hooks of their wings, and shrieking at the top of their voices. Each one must fight every morning for his place to



hook on, and having got it, feels bound that all later comers shall have as hard a time as he had.

These large bats, some of which measure six feet from tip to tip of the wings, do not confine themselves wholly to fruits, but sometimes chase small birds and quadrupeds, and frequently vary their bill of fare with insects ; on the other hand, some species are eaten by men, and said to taste like chicken. They were known to the most ancient writers, and the old fables of the Egyptians, Greeks, and Hindoos are full of stories about their marvellous qualities. It is supposed that those fabulous animals, the Harpies, owe their origin to the ridiculous notions believed of the terrible powers of the kalongs. They are called flying-foxes because of the reddish color of their fur, and the foxy shape of their heads and faces.

South America also has its large bats, of one of which everybody has heard — the vampire. Much nonsense has been written about it, but there was some foundation for the stories of its sucking the blood of men and animals until it killed them. In the interior of South America nearly everybody sleeps in a hammock either out-of-doors or with the windows open, and the weather is so warm that little covering is used. The vampire comes in on silent wings, and finding a toe exposed, gently pricks it with his sharp tooth, and

draws the blood until he can swallow no more. The sleeper rarely is awakened, and does not know his loss until morning. He may then feel weak from the flow



BAT'S FUR.

of blood, but I am not aware that a man was ever known to die from this cause. Horses are very greatly troubled by them also. Mr. Charles Watterton, an enthusiastic naturalist now dead, who spent several years in New Guiana, has told us much about this ugly bat, but could never induce one to taste of his toe, although he would have been very glad to be able to say

that he had been operated upon. For eleven months he slept alone in the loft of a deserted wood-cutter's hut in the deep forest. There the vampires came and went as they wished. He saw them come in the moonlight on stealthy wings, and prick the ripe bananas ; lay in his hammock and watched them bring almost to his bedside the green wild fruit of the wild guava ; floating down the river on other moonlight nights was struck by the falling blossoms of the lawarri-nut tree which the vampires pulled from the branches to get at the tender seed-vessel, or the insects that lurk in the deep corolla. He lay night after night with his bare foot exposed, but could never get them to lance it, although his friends and companions were all bled by this nocturnal surgeon ; and except that he once caught one fastened to the shoulder of one of his animals, he came away no wiser than when he went of how the vampire does his horrid work.

The vampires measure about twenty-six inches across, the wings ; frequent old houses and hollow trees, and repose in clusters, head downwards, from the branches of forest trees.

This is *something* about bats. They are very interesting little animals, and not at all supernatural, as you have found out.

It will reward you well to study them closely at every opportunity ; and you will find that you can keep them very well in confinement, feeding them insects and raw beef, with plenty of water, looking out that they do not escape by squeezing through some crevice where you thought it impossible. Gilbert White (whose "Natural History of Selborne," although almost one hundred years old, is one of the most delightful books in the English language) had a tame bat which would take flies out of his hand. Having got it, the bat would bring its wings round in front of its head so as to hide its mouth, and, stripping off the wings would eat the fly, snapping his teeth at each bite like a hungry dog.

One day an English gentleman caught a bat in the belfry of the cathedral at Bruges — "that quaint old Flemish city," and the very cathedral of which Longfellow wrote his beautiful poem. He wrapped him up in his handkerchief, took him home to London with him, and built him a nice cage. "Piggy" — for that was the name he gave the bat — soon recovered his spirits, and ate eight meal-worms daily, besides several daddy-long-legs, of which he seemed fond, for he would smack his lips after each one. When Piggy seemed thirsty his master would give him water on the end of his finger ; but if he gave him too much, Piggy would



squeak like a mouse and try to bite. After a good meal, Piggy would purr louder than a cat in comparison to his size, and if stroked gently, would erect his ears and put first one and then the other up to be scratched. All his habits were cleanly, and his manners funny.

But Piggy died after about five months, and so ends our bat story.



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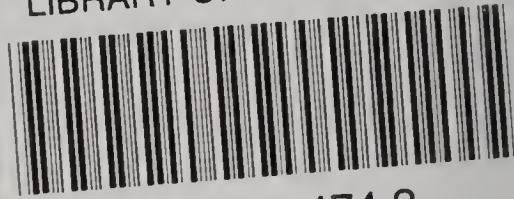
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